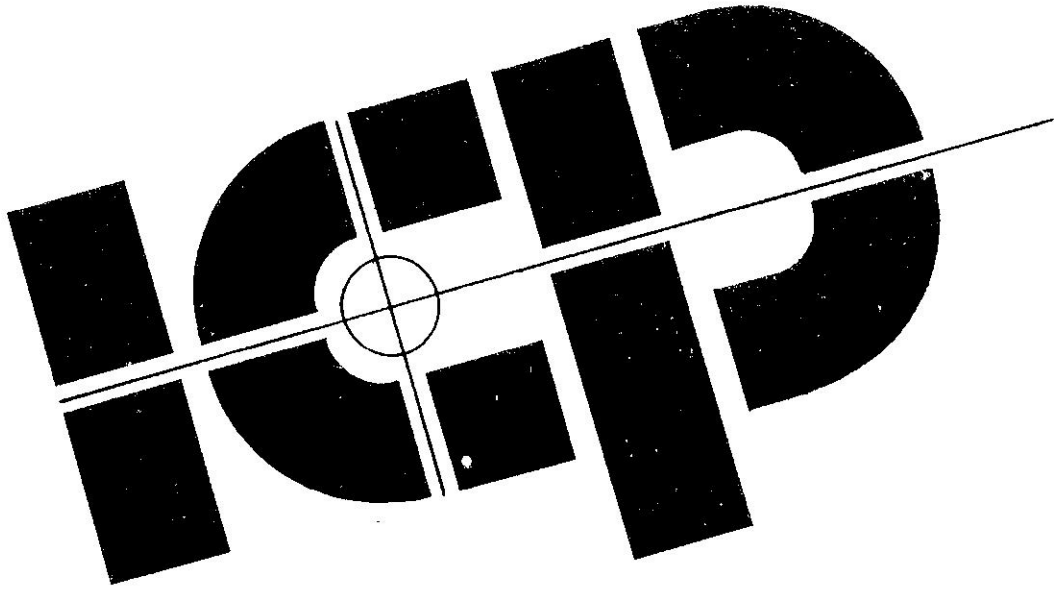
SSC-486H Ver. C

Half-sized 486

Single Board Computer



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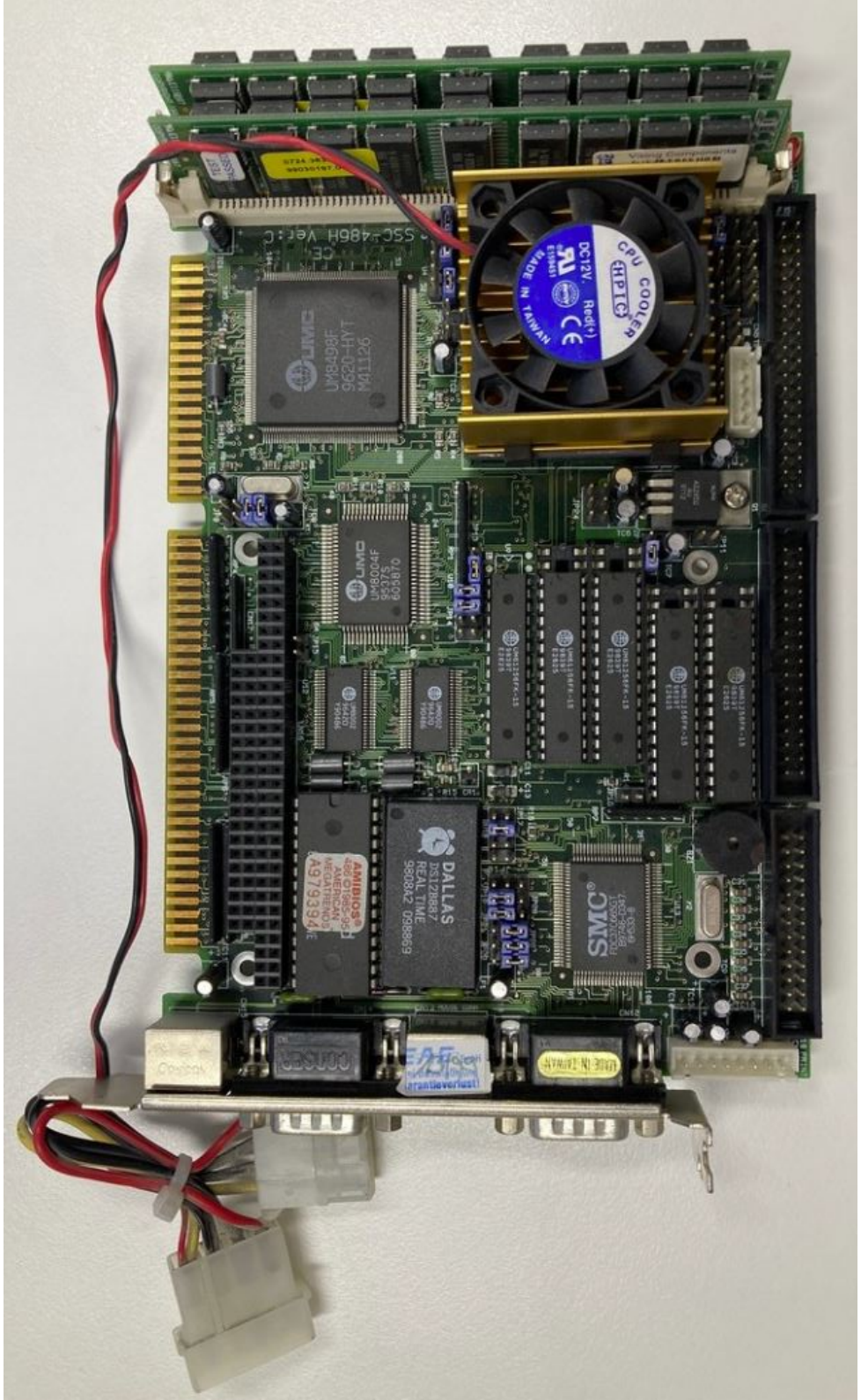

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1

Introduction

Welcome to the SSC-486H Half-sized 486 Single Board Computer. The SSC-486H board is an ISA and PC/104 form factor board, which comes equipped with high performance 486DX/DX2 or the latest DX4 CPU and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

An advanced high performance super AT I/O chip SMC FDC37C665 is used in the SSC-486H board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT and XT architecture's. The FDC37C665 incorporates sophisticated power control circuitry(PCC). The PCC supports multiple low power down modes.

In addition, the SSC-486H provides two 72-pin sockets for its on-board DRAM. The 72-pin accepts 1MB, 2MB, 4MB, 8MB, 16MB, and 32MB SIMM. So, the total on-board memory can be configured from 1MB to 64MB.

SSC-486H uses the UMC chipset, UM8498F and UM8496F, which are 100% ISA compatible chipset.

1.1 Specifications :

The SSC-486H Half-sized 486 Single Board Computer provides the following specification:

- **CPU** : 486SX/DX/DX2 or DX4
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : UM8498F and UM8496
- **Real-time clock/calendar** : DS-12887 chip and quartz oscillator, 128B CMOS memory, powered by lithium battery for over 10 years of data retention.
- **RAM memory** : 1MB to 64MB
- **Second Cache memory** : 128KB,256KB,or 512KB
- **IDE hard disk drive interface** : up to two IDE hard drives.
- **Floppy disk drive interface** : two 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives.
- **Two high speed Series ports** : NS16C550 compatible UARTs
- **Bi-directional Parallel Port**
- **Watch-dog timer** : can be set by 1,2,10,20,110 or 220 seconds period. Reset or NMI was generated when CPU did not periodically trigger the timer. Your program use hex 043 and 443 to control the watch-dog and generate a system reset.
- **PC/104 expansion bus**
- **External power connector**
- **Keyboard connector**
- **Mouse** : PS/2 Mouse Port on-board.
- **Power Consumption** : +5V @ 2.5A (486DX2-66, 4MB RAM)

  ±12V @ 20mA (for RS-232 only)
- **Operating Temperature** : 0° ~ 60° C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the SSC-486H package includes the following items:

- SSC-486H Half-size 486 Single Board Computer
- Printer Cable
- FDD/HDD Cable
- 6-pin Mini-Din to 5-pin Din Keyboard Adapter Cable

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2

Installation

This chapter describes how to install the SSC-486H. At first, the layout of SSC-486H is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the SSC-486H's configuration, such as CPU type selection, system clock setting, and interrupt IRQ setting for serial ports and parallel port, are also included.

2.1 SSC-486H's Layout

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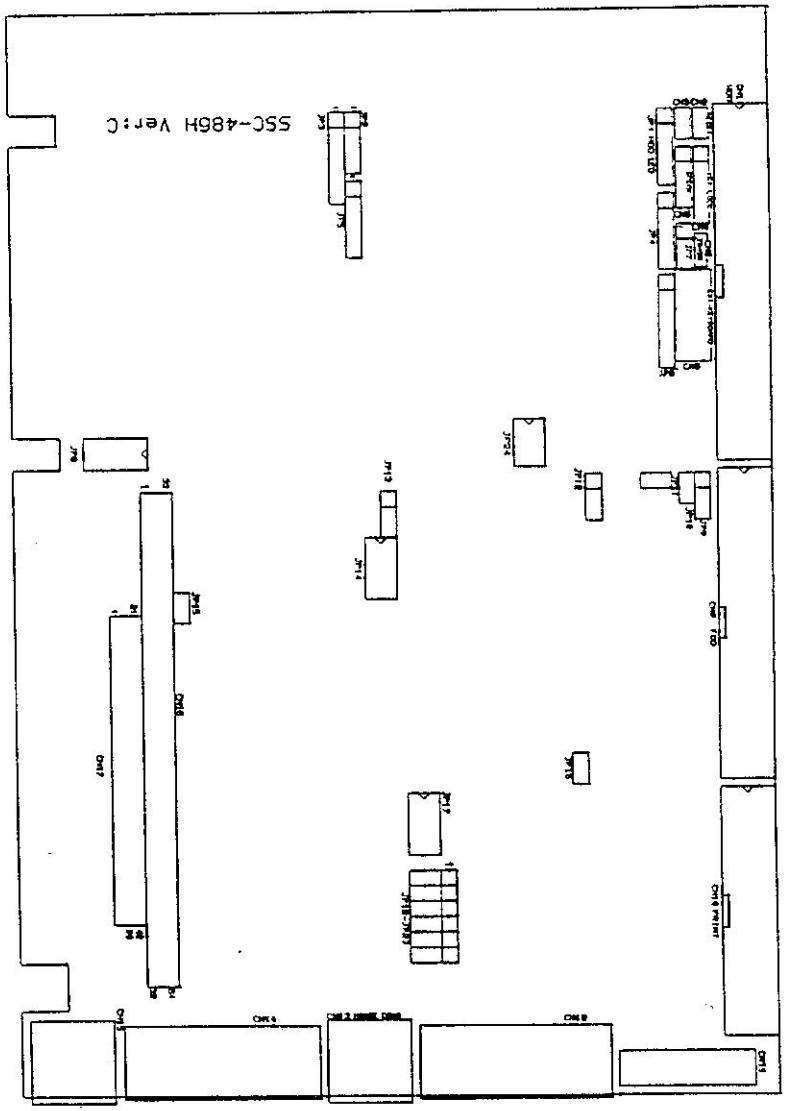


2.2 Unpacking

Your SSC-486H Single Board Computer contains sensitive electronic components that can be easily damaged by static electricity.

In this section, we describe the precautions you should take while unpacking, as well as during installation. It is very important that the instructions be followed correctly, to avoid static damage, and to successfully install the board.

The system board should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the cardboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handing damages on the board before processing.

After opening the cardboard carton, exact the system board and place it only on a grounded anti-static surface component side up.

Again inspect the board for damage. Press down on all the socketed IC's to make sure that they are properly seated. Do this only with the board place on a firm flat surface.

Note : DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.

You are now ready to install your SSC-486H Single Board Computer.

2.3 Jumper Description

You can change the SSC-486H's configuration by setting jumper switches on the board. The board's jumpers are preset at the factory. Under normal circumstances, you should not need to change the jumper settings.

A jumper switch is **closed** (sometimes referred to as shorted with the plastic cap inserted over two pins of the jumper). A jumper is **open** with the plastic cap inserted over one or no pin(s) of the jumper. Figure 2.2 below shows different jumper settings which will be used in this chapter.

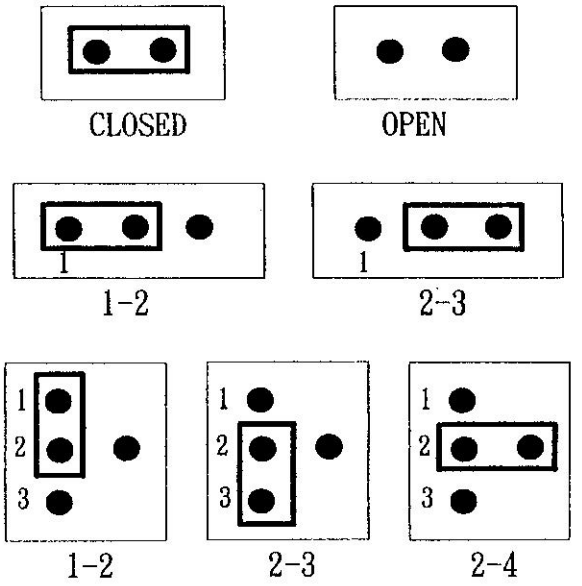


Figure 2.2

2.4 Upgrade the CPU

If you want to upgrade the CPU, you must do two things:

1. Set the jumpers for CPU type.
2. Adjust the jumpers setting for CPU speed.

- **CPU Type Setting:**

	JP1	JP2	JP3	JP4	JP5	JP6	JP7
486SX UMC U5S	2-3	2-3	OPEN	OPEN	OPEN	OPEN	OPEN
*** 486DX/DX2/ DX4**	**2-3**	**1-2 3-4**	**OPEN**	**OPEN**	**1-2**	**OPEN**	**OPEN**
Cyrix DX4	2-3	1-2 3-4	5-6	2-3	1-2	OPEN	OPEN

(*) : default setting

- **CPU CLOCK GENERATOR SPEED SETTING:**

The system clock is generated by the AV9107-3, and the different clock frequency can be selected by JP8 and shown as following table:

JP8	1-2	3-4	5-6	7-8
8MHz	CLOSE	OPEN	OPEN	CLOSE
16MHz	CLOSE	CLOSE	CLOSE	CLOSE
25MHz	CLOSE	OPEN	CLOSE	OPEN
*** 33MHz**	**CLOSE**	**CLOSE**	**OPEN**	**OPEN**
40MHz	OPEN	CLOSE	CLOSE	CLOSE
50MHz	CLOSE	OPEN	CLOSE	CLOSE
66MHz	CLOSE	CLOSE	OPEN	CLOSE
80MHz	OPEN	OPEN	CLOSE	CLOSE

(*): default setting

Note : The CPU speed is the same as Clock Generator's speed.

- **CPU VOLTAGE SELECTION - 5V,3.3V,or 3.6V**

Because right now in the market have several kind of CPU using different voltage in core logic. For example the AMD

offers 486DX2-66/80 and DX4-100/120 at 3.3V,Intel offers DX4-75/100 at 3.3V,and some Cyrix CPU will use 3.6V. So please check your CPU voltage before you turn on the system and set the right jumper position.

CPU Voltage	JP24	JP12
+5V	1-2 3-4 5-6	2-3
*** +3.3V**	**OPEN**	**2-3**
+3.6V	OPEN	1-2

(*) : default setting

2.5 Upgrade the External Cache

The SSC-486H offers one bank,U5-U9 for external cache capacity,the range is from 128KB to 512KB. The different cache memory setting is as follows,

Cache	SRAM Type	JP13	JP14
***128KB**	**32K x 8**	**2-3**	**1-2 3-4**
256KB	64K x 8	1-2	1-2 3-4 5-6
512KB	128Kx 8	1-2	1-2 3-4 5-6 7-8

Note : Tag RAM (U9) : 32K x 8 less than 15ns, fixed
Cache RAM : U5-U8,less than 20ns

2.6 System Memory DRAM

There are two 72-pin SIMM sockets to accept 1Mb,2MB,4MB,8MB,16MB,or 32MB memory modules. The total capacity is from 1MB to 32MB. Customer can free install any memory module on any socket. Don't care which socket is first to install.

2.7 Watch-Dog Timer

The Watch-Dog Timer is enabled by reading port 443H. It should be triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again, or activate NMI to CPU. The Watch-Dog Timer is disable by reading port 043H. See Appendix A for more detailed description of Watch-Dog Timer.

The Watch-Dog Timer time-out period can be set 1,2,10,20,110,or 220 sec. by jumper JP17.

- **JP18 : Watch-Dog Active Type Setting**

JP18	DESCRIPTION
***1-2**	**RESET WHEN WDT TIME-OUT**
2-3	ACTIVATE NMI TO CPU WHEN WDT TIME-OUT
OPEN	DISABLE WDT

(*): default setting

- **JP17: WDT TIME-OUT PERIOD**

PERIOD	1-2	3-4	5-6	7-8
1 sec.	OPEN	OPEN	CLOSE	OPEN
2 sec.	OPEN	OPEN	CLOSE	CLOSE
***10 sec.**	**OPEN**	**CLOSE**	**OPEN**	**OPEN**
20 sec.	OPEN	CLOSE	OPEN	CLOSE
110 sec.	CLOSE	OPEN	OPEN	OPEN
220 sec.	CLOSE	OPEN	OPEN	CLOSE

(*) : default setting

2.8 Parallel Port Interface

The on-board parallel port is CN10 (refer to Chapter 3 for details). This port can be set I/O address to 378H~37FH, 278H~27FH, 3BCH~3BEH or Disabled by BIOS setup. Also, the port's interrupt can be set to IRQ7 or IRQ5 by jumper JP22, set

Data Request Selection by JP20, and set Data Acknowledge by JP19.

The SSC-486H allows installation of up to three different I/O ports. These three ports are called: LPT1, LPT2, and LPT3. The printer port on the Monochrome/Printer Adapter that is addressed at 3BCH~3BEH will be LPT1 when it is installed. Then the port's address 378H~37FH will be LPT2, and 278H~27FH will be LPT3. If the Monochrome/Printer Adapter is used instead of Color/Graphic Adapter, then the 378H~37FH will be LPT1, and 278H~27FH will be LPT2. All the setting for the parallel port is done by BIOS Setup program, please refer to Chapter 4 for more details.

- **JP22 : Parallel Port Interrupt Setting**

JP22	DESCRIPTION
*** 1-2**	**IRQ7**
2-3	IRQ5

(*) : default setting

- **JP20: Parallel Port Data Request Setting (Reserved)**

JP20	DESCRIPTION
1-2	DRQ1
*** 2-3**	**DRQ3**

(*) : default setting

- **JP19 : Parallel Data Acknowledge (Reserved)**

JP19	DESCRIPTION
1-2	DACK1
*** 2-3**	**DACK3**

(*) : default setting

2.9 Serial Port Interface

There are two on-board RS-232 serial ports interface, CN12(ACE0) and CN14(ACE1). The serial ports can be configured as COM1, COM2, COM3, COM4, or Disabled by

BIOS setup. The interrupt of these ports can be set by jumper JP21 and JP23.

• JP21 : COM1 Serial Port Interrupt Setting

JP21	COM1
* 1-2	IRQ4
2-3	IRQ15

(*) : default setting

• JP23 : COM2 Serial Port Interrupt Setting

JP23	COM2
* 1-2	IRQ3
2-3	IRQ11

(*) : default setting

2.10 IDE Host Adapter Interface

A 40-pin header type connector, CN1, is to interface with up to two embedded drives. This interface can be enabled or disabled by BIOS setup.

• JP11 : I/O Channel Ready Setting

JP11	Description
* OPEN	IDE IOCHDRY Non-Connected
CLOSE	IDE IOCHDRY Connected

(*) : default setting

2.11 Floppy Disk Controller

The SSC-486H provides a 34-pin header type connector, CN9, for supporting up to two floppy drivers. The floppy drives may be any one of the following types: 5.25" 360K/1.2MB and 3.5" 720K/1.44MB/2.88MB. The on-board Floppy Disk controller can be enabled or disabled by BIOS setup. The details will be described in Chapter 3.

2.12 FDC37C665 Multi-I/O Chipset

The SSC-486H comes equipped with super multi-I/O chipset SMC FDC37C665, you can select JP16 to enable or disable the FDC37C665.

• JP16 : Multi-I/O FDC37C665/666 Setting

JP16	DESCRIPTION
* OPEN	ENABLE FDC37C665
CLOSE	DISABLE FDC37C665

(*) : default setting

2.13 PS/2 Mouse Setting

The SSC-486H have built-in PS/2 mouse port to release one serial port for other application. The PS/2 mouse normally will use the IRQ12 when install it.

• JP15 : PS/2 Mouse IRQ Selection

JP15	DESCRIPTION
OPEN	Non
*CLOSE	IRQ12

(*) : default setting

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the SSC-486H board.

3.1 Floppy Disk Drive Connector

SSC-486H board comes equipped with a 34-pin daisy-chain driver connector cable. The detailed pin assignment of the connector is specified as following table:

• CN9 : FDC CONNECTOR

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

3.2 IDE Disk Drive Connector

You can attach two IDE(Integrated Device Electronics) hard disk drives to the SSC-486H internal controller. The board comes equipped with a 40-pin flat-cable connector.:

• CN1: IDE Interface Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

3.3 Parallel Port

This port is usually connected to a printer, The SSC-486H includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN10.

• CN10 : Parallel Port Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #

15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	IOW#	24	GROUND
25	GROUND		

3.4 Serial Ports

The SSC-486H offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports. These ports let you connect to serial devices or a communication network. Two DB-9 connectors are provides by the SSC-486H.

- **CN12 & CN14 : Serial Port Connector(ACE0 & ACE1)**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

3.5 Keyboard Connector

The SSC-486H provides two keyboard connectors. A 5-pin header connector CN8 supports passive backplane applications. Another one is a 6-pin Mini-DIN connector CN15 on the board mounting bracket for single board computer applications.

- **CN8 : 5-pin Header Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	+5V

- **CN15 : 6-pin Mini-DIN Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	N/C
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	N/C

3.6 External Switches and Indicators

There are many external switches and indicators for monitoring and controlling your CPU board. These features are completely optional install them if you need them.

- **CN2 : RESET BUTTON**

PIN NO.	DESCRIPTION
1	EXTERNAL RESET
2	GROUND

- **CN4 : POWER LED & KEYLOCK**

PIN NO.	DESCRIPTION
1	POWER LED ANODE
2	KEY
3	GROUND
4	KEYLOCK
5	GROUND

- **CN3 : IDE LED connector**

PIN-NO	DESCRIPTION
1	+5V
2	HDD ACTIVE#

3.7 External Power Connector

The SSC-486H has an on-board external power connector CN11. You can connect power directly to the CPU board for some single-board-computer(without passive backplane) application.

- **CN11 : EXTERNAL POWER CONNECTOR**

PIN NO.	DESCRIPTION
1	+5V
2	+12V

3	-12V
4	GROUND
5	GROUND
6	-5V
7	+12V
8	+5V

3.8 External Speaker

The SSC-486H has its own buzzer, you also can connect to the external speaker through the connector CN5.

- **CN5 : SPEAKER**

PIN NO.	DESCRIPTION
1	SPEAKER SIGNAL
2	NC
3	GROUND
4	+5V

3.9 PS/2 Mouse 6-pin Mini-DIN Connector

- **CN13 : PS/2 Mouse Connector**

PIN NO.	DESCRIPTION
1	MS DATA
2	NC
3	GROUND
4	+5V
5	KBT1
6	NC

3.10 PC/104 Connection Bus

The SSC-486H's PC/104 expansion bus let you attach any kind of PC/104 modules. The PC/104 bus is already become the industrial standard, so you could easily install over thousands of PC/104 modules from hundreds of venders in the world.

Note : The PC/104 connector allows stack-thru PC/104 Module directly to plug in. Don't need the mounting kit which included in last version product.

- **CN16 & CN17 : PC/104 Expansion Bus**
  (CN16 = 64-pin female connector;
  CN17 = 40-pin female connector.)

Pin NO.	J1 / P1 Row A	J1 / P1 Row B	J2 / P2 Row C	J2 / P2 Row D
0	--	--	0V	0V
1	IOCHECK*	0V	SBHE*	MEMSC16*
2	SD7	RESETDRV	LA23	IOSC16*
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12V	LA18	IRQ14
8	SD1	NOWS*	LA17	DACK0*
9	SD0	+12V	MEMR*	DRQ0
10	IOCHRDY	(KEY)	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	AS19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0V
19	SA12	REFRESH*	(KEY)	0V
20	SA11	SYSCLK	--	--
21	AS10	IRQ7	--	--
22	SA9	IRQ6	--	--
23	SA8	IRQ5	--	--
24	SA7	IRQ4	--	--
25	SA6	IRQ3	--	--
26	SA5	DACK2*	--	--
27	SA4	TC	--	--
28	SA3	BALE	--	--
29	SA2	+5V	--	--
30	SA1	OSC	--	--
31	SA0	0V	--	--
32	0V	0V	--	--

NOTES:
1. Rows C and D are not used on 8-bit modules.
2. P2 has two connector options with differing physical pinout orientation.
3. B10 and C19 are key locations.
4. Signal timing and function are as specified in p996.
5. Signal source/sink current differ from P996 values.

4

AMI WinBIOS Setup

The SSC-486H uses the latest AMI WinBIOS for system configuration, and the AMI WinBIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options which may be selected for end-user requirements.

4.1 WinBIOS

AMI's new WinBIOS includes all features from previous BIOS version. In addition, It also provides many new features, functions, and a new system configuration utility with an graphical user interface.

4.2 Getting Start

When the system is powered on, the WinBIOS will enter the Power-On-Self-Test routines. These routines will be executed for System Test,Initialization, and System Configuration Verification. After the POST routines are completed, the following message appears :

" Hit < Del>, if you want to run SETUP"

4.3 Standard Setup

The WinBIOS Setup options described in this section are selected by choosing the Standard icon from the main menu selection screen.

Date, Day, and Time Configuration

Select the Standard option, and then select Date and Time icon. The current values for each category are displayed. Enter new values through the keyboard.

Hard Disk C: type and Hard Disk D: type

Select one of these hard disk drive icons to configure the drive named in the option. A scrollable screen that lists all valid disk drives is displayed. Select the correct type and press <Enter>.

Floppy Drive A: and Floppy Drive B:

Select one of these floppy disk drive icons to configure the floppy type. The settings are 360KB 5.25", 1.2MB 5.25", 720KB 3.5", 1.44MB 3.5", or 2.88MB 3.5".

4.4 Advanced Setup

When you select the Advanced Setup icon, the screen will appear. All the setting items are displayed in the scrolled windows.

Major settings are :

System Keyboard - Present or Absent
Primary Display - VGA/CGA,..or Absent
Mouse Support - Enable or Disable
System Boot Sequence : A: C: or C: A:
Shadow RAM : from C0000 to E0000 segment
Primary IDE Block Mode : Disable,Master,Slave,or Mas/Sla
Primay IDE LBA Mode : Disable,Master,Slave,or Mas/Sla

4.5 Chipset Setup

When you enter the Chipset Setup. This portion of BIOS Setup is entirely chipset specific and requires knowledge about the particular chip set in use.
For general appliation,please use this board under the Auto Configuration capability. If you did not familiar the chipset,please don't change the default setting to prevent any potential problem.

4.6 Peripheral Setup

- On-Board FDC : The option enables the on-board floppy drive controller.The settings are Enable or Disable
- On-Board IDE : The option enables the on-board IDE controller. The setting are Enable or Disable
- Serial Port 1 : The options are Disable, 3E8, or 3F8.
- Serial Port 2 : The options are Disable, 2E8, or 2F8.
- Parallel Port : The options are Disable, 3BC, 378 or 2F8.
- Parallel Port Mode : This option specifies the parallel port mode. The settings are Normal or Extended.
- Parallel Extended Mode : SSC-486H provides bi-direction parallel port and reserve function for EPP/ECP,

4.7 Utility

The following icons appear in this section:

Detect Master if drive C: is an IDE drive, the hard disk drive parameters for drive C: are automatically detected and reported to the hard disk drive C: screen in Standard Setup.

Detect Slave if drive D: is an IDE drive, the hard disk drive parameters for drive D: are automatically detected and reported to the hard disk drive D: screen in Standard Setup.

Color Set : sets the WinBIOS Setup screen colors

4.8 Security

The following icons appear in this section:

Password : You can set the password works when every time the system boots or WinBIOS Setup is executed.

Anti-Virus : The setting are Enable and Disabled. If enabled, any write to boot sector will be protected.

Appendix A. Watch-Dog Timer

The Watch-Dog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that caused the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a non-maskable interrupt (NMI) to bring the system back to a known state.

The Watch-Dog Timer is controlled by two I/O ports.

443 (hex)	Read	Enable the refresh the Watch-Dog Timer.
043 (hex)	Read	Disable the Watch-Dog Timer.

To enable the Watch-Dog Timer, a read from I/O port 443H must be performed. This will enable and activate the countdown timer which will eventually time out and either reset the CPU or cause an NMI depending on the setting of JP18. To ensure that this reset condition does not occur, the Watch-Dog Timer must be periodically refreshed by reading the same I/O port 433H. This must be done within the time out period that is selected by jumper group JP17.

A tolerance of at least 30% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time consuming. Therefore if the time out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Note: when exiting a program it is necessary to disable the Watch-Dog Timer, otherwise the system will reset.

```
10      REM EXAMPLE PROGRAM
11      REM WATCH-DOG TIMER == WDT
20      GOSUB 5000 REM ENABLE AND REFRESH THE WDT
30      GOSUB 1000 REM TASK 1, 2 SECS
40      GOSUB 5000 REFRESH THE WDT
50      GOSUB 2000 REM TASK 2, 3 SECS
60      GOSUB 6000 REM DISABLE THE WDT
70      GOSUB 3000 REM TASK 3, 5 SECS
80      GOSUB 5000 REM ENABLE AND REFRESH THE WDT
90      GOTO 30

1000    REM SUBROUTINE #1
        2 SECONDS TO COMPLETE
1070    RETURN

2000    REM SUBROUTINE #2
        3 SECONDS TO COMPLETE
2070    RETURN

5000    REM SUBROUTINE TO ENABLE AND RESET  WDT
5010    X = INP( &H443) REM ENABLE AND REFRESH TIMER
5020    RETURN

6000    REM SUBROUTINE TO DISABLE THE WDT
6010    X = INP( &H43)  REM RESET WDT
6020    RETURN
```

3. Reconfigure AMI WINBIOS System

3.1. Enter AMI WINBIOS configuration program

During power-on memory test, pressing the <Del> key will bring the SETUP main menu to the screen. You can use the <Tab> Key to switch to the next window field and use the <Enter> key to make selection in the current field. Pressing <Alt><H> will help you on more detail during to setup.

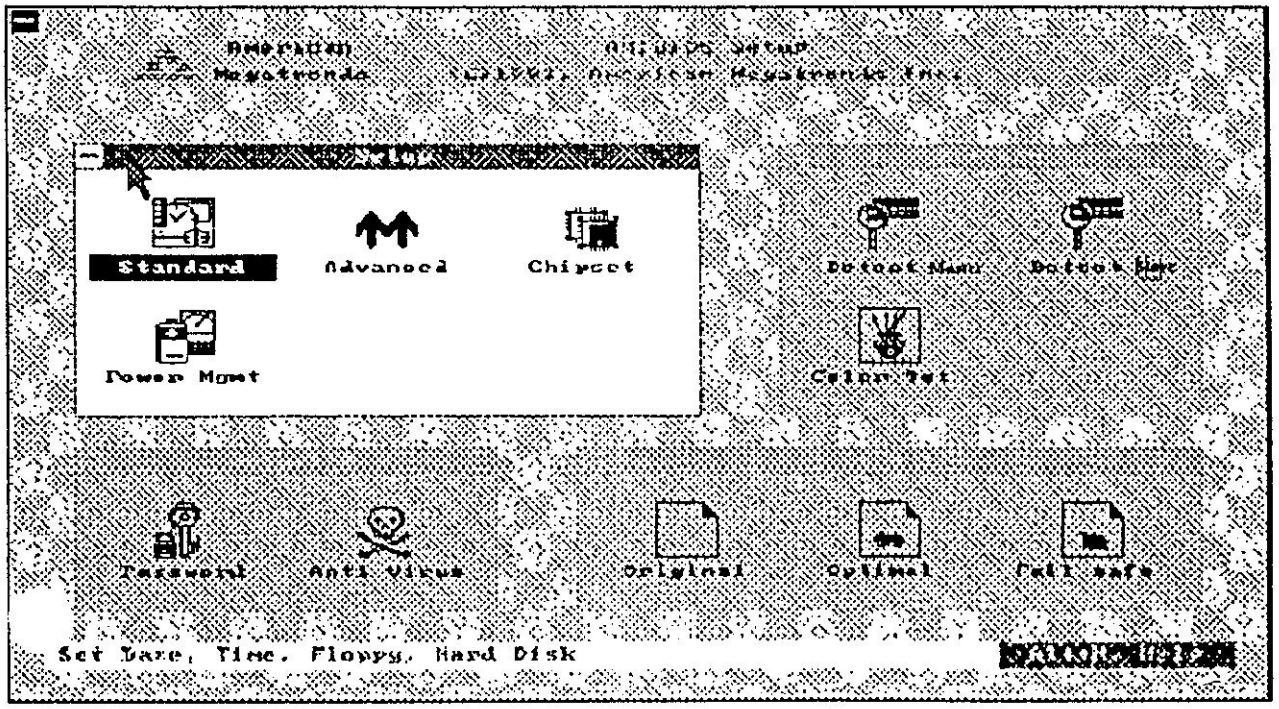


Figure 3-1 The screen of WINBIOS SETUP PROGRAM

NOTE : Use mouse to select a desired option. After highlighting an option, press the <Enter> key to enter its menu.

3.2. Standard Setup

The WinBIOS setup options described in this section are selected by choosing the appropriate high-level icon from the WinBIOS Setup main menu selection screen. The selected windows is shown below.

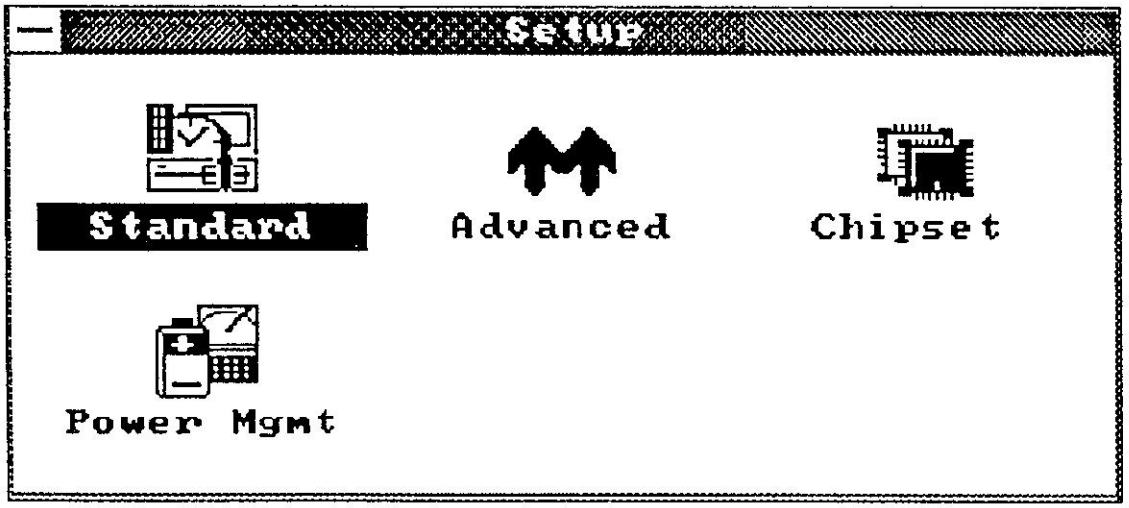


Figure 3-2 The screen of STANDARD SETUP

When "Standard" was selected

The STANDARD Setup screen is as follows.

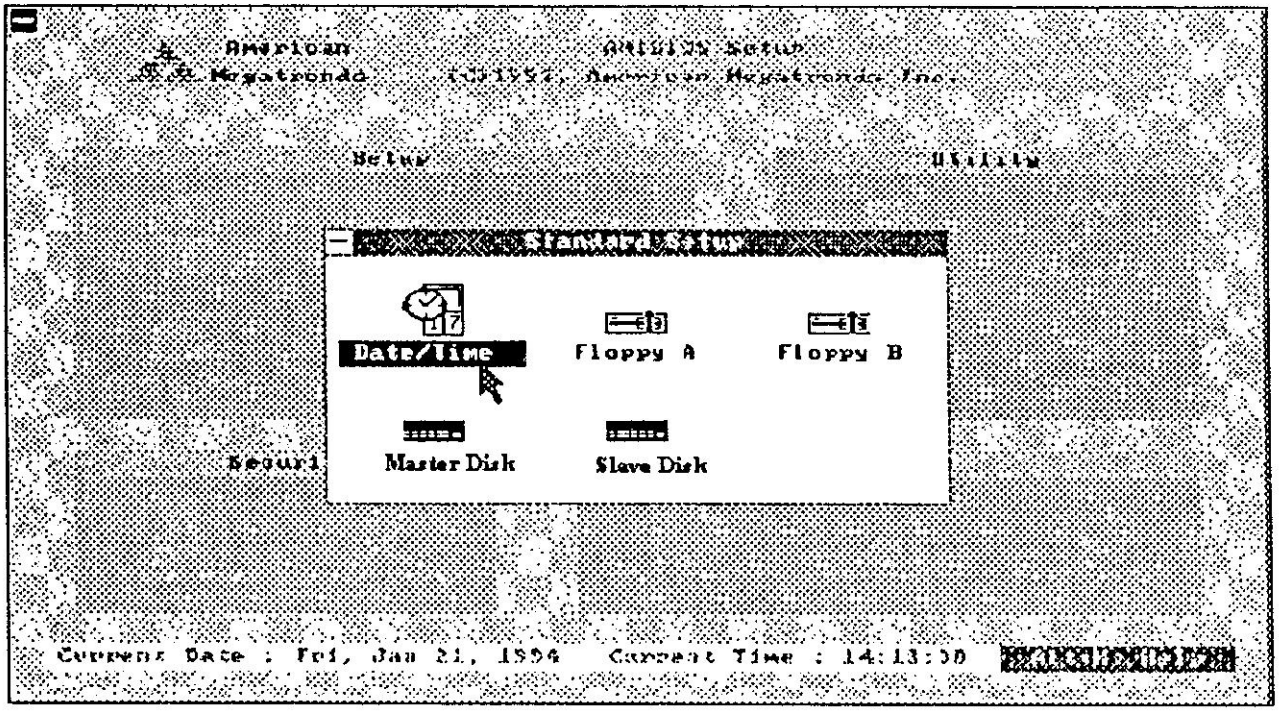


Figure 3-3 The screen of STANDARD SETUP

Within the "Standard" setup screen move the cursor to select the "Date/Time", "Floppy A", "Floppy B", "HardDisk C" and "HardDisk D" icons, then press the <Enter> key to setup them.

3.3. Advanced Setup

ADVANCED SETUP	
Typematic Rate (Chars / sec)	: 30
System Keyboard	: Absent
Primary Display	: VGA/EGA
Above 1MB Memory Test	: Disabled
Memory Test Tick Sound	: Enabled
Hit "Del" message display	: Enabled
Extended BIOS RAM Area	: 0 : 300
Wait For "F1" If Any Error	: Enabled
System Boot Up Num Lock	: On
Weitek Processor	: Absent
Floppy Drive Seek At Boot	: Enabled
System Boot Up Sequence	: A:, C:
System Boot Up CPU Speed	: High
External Cache	: Enabled
Internal Cache	: Enabled
Internal Cache W/B option	: W/Thrw
Password Checking	: Setup
Video Shadow C000, 32K	: Enabled
Shadow C800, 32K	: Disabled
Shadow D000, 32K	: Disabled
Shadow D800, 32K	: Disabled
Shadow E000, 32K	: Disabled
IDE Block Mode Xfer	: Disabled
IDE Prim Controller 32 Bit Xfer	: Enabled
IDE Prim Master HDD LBA Mode	: Disabled
IDE Prim Slave HDD LBA Mode	: Disabled
Number of HDDS in sec controller	: None
IDE SEC Controller 32 Bit Xfer	: Disabled
IDE SEC Master HDD LBA Mode	: Disabled
IDE SEC Slave HDD LBA Mode	: Disabled
Video Cacheable option	: Disabled
BIOS Cacheable option	: Disabled

IMPORTANT NOTE :

Note: When system under DOS operation, IDE CHS Mode supports most HD size upto 528MB, LBA Mode support IDE drives larger than 528MB when enabled. Novell Netware and UNIX system can support IDE drives larger than 528MB use IDE CHS Values (no LBA translation), the IDE LBA Mode Setup according to next description:

HD SIZE larger than 528MB and system work under DOS:

IDE LBA Mode:Enabled.

Work under Novell Netware and UNIX system IDE LBA Mode:Disabled.

HD SIZE smaller than 528MB, under All system, IDE LBA Mode:Disabled.

4 HDs support :

If using 4 HDs, you can change "number of HDDs in Sec controller" to 2.

The Prim master HDD and slave HDD can be autodetected at Utility (page 3-6).

The Sec master HDD and slave HDD have no display in BIOS, but can be seen when you work in system.

3.4. Chipset Setup

CHIPSET SETUP	
Auto Config Function	: Enabled
DRAM Speed Option	: Faster
DRAM Write CAS Pulse	: 2T
DRAM Write Cycle	: 0 W/S
Cache Write Cycle Option	: 2T
Cache Burst Read Cycle	: 2T
Bus Clock Frequency Select	: 1/4 CLK
Hidden Refresh	: Enabled
Non-Cacheable Area1	: DRAM
Non-Cacheable Size1	: Disabled
Local BUS Ready	: SYNC
Memory Intir Driving Capty	: 24 mA

Note: If you use different CPU, the display of configuration is difference.

3.5. Power Management Setup

POWER MANAGEMENT SETUP	
IDE Standby Power Down Mode	: Disabled
BIOS Power Management Mode	: Enabled
APM Interface	: Enabled
Standby Timer	: 10 Sec
Suspend Timer	: 10 Sec
EVENT	:
Keyboard Activity	: Enabled
Video Activity	: Disabled
HDD/FDD Activity	: Enabled
VESA Master Activity	: Disabled
DMA Activity	: Enabled
IRQ 3 (COM2/LAN) Activity	: Enabled
IRQ 4 (COM1) Activity	: Enabled
IRQ 5 (LPT2) Activity	: Enabled
IRQ 7 (LPT1) Activity	: Enabled
IRQ 9 Activity	: Enabled
IRQ 10 Activity	: Enabled
IRQ 11 Activity	: Enabled
IRQ 12 Activity	: Enabled
Display Adapter Type/method	: Sync. off
Display Off When ? Timeout	: Disabled
Smout value on Stby	: XXXXXX00
Smout Value on Spnd	: XXXXXX00

3.6. Utility

ICON	FUNCTION
Detect Master	Automatical detect & configure Drive C:
Detect Slave	Automatical detect & configure Drive D:
Color Set	Set the color of WinBIOS Setup screen

3.7. Password Setup

WinBIOS Setup has an optional password feature. The system can be configured so that all users must enter a password every time the system boots or when the password icon was selected.

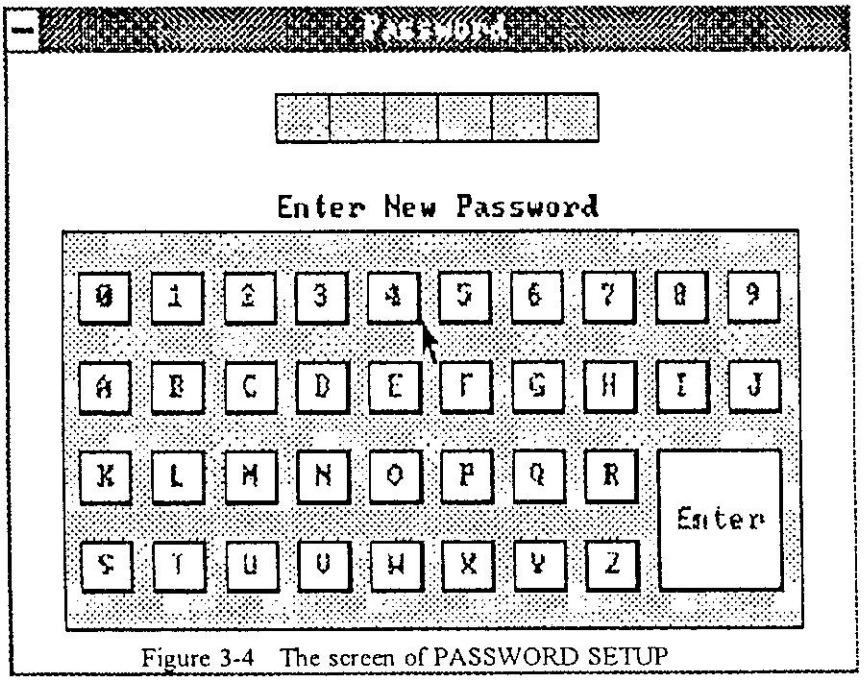


Figure 3-4 The screen of PASSWORD SETUP

You can enter a password by :

- Typing the password on the keyboard.
- Selecting each letter via the mouse, or
- Selecting each letter via the pen stylus.

Pen access must be customized for specific hardware platform.

The password check option is enabled in Advanced Setup figure 3-4 by choosing either ALWAYS (the password prompt appears every time when the system is powered on) or SETUP (the password prompt appears only when WinBIOS setup is run). The password is stored within CMOS RAM.

Enter a 1-6 character password. The password does not appear on the screen when typed. WinBIOS will ask you to retype the password for confirmation. WinBIOS will then display the following :

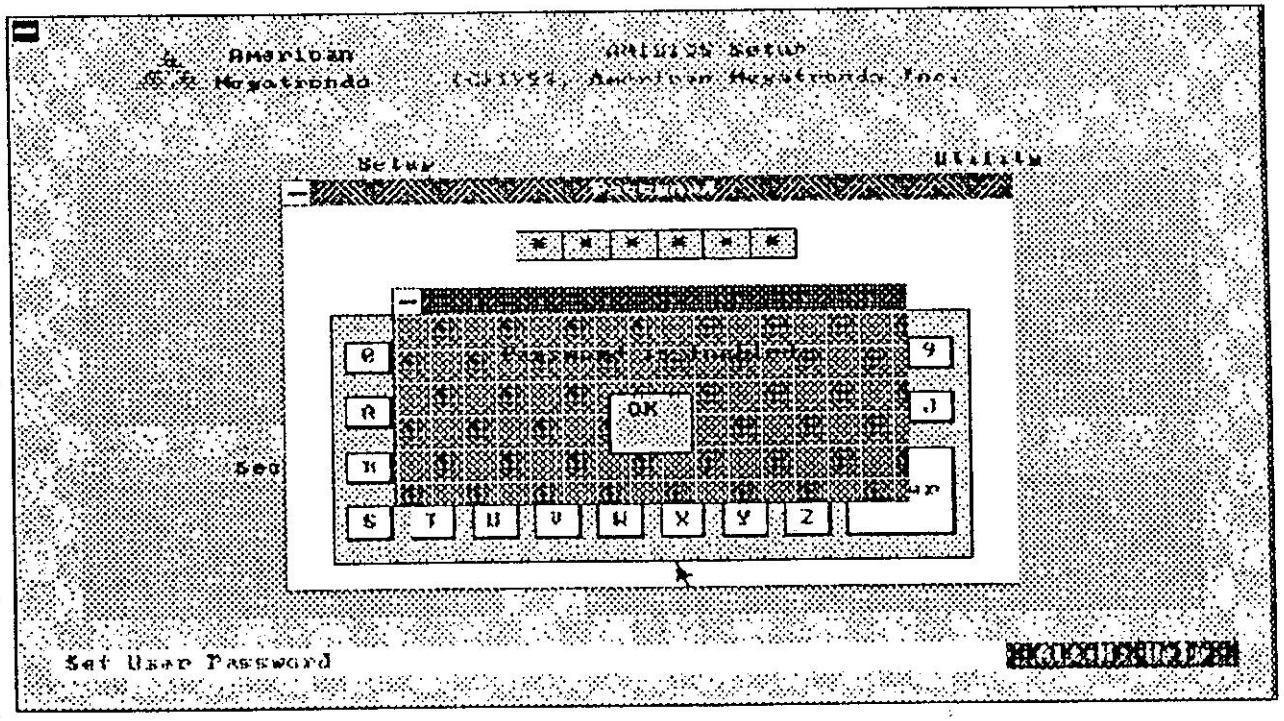


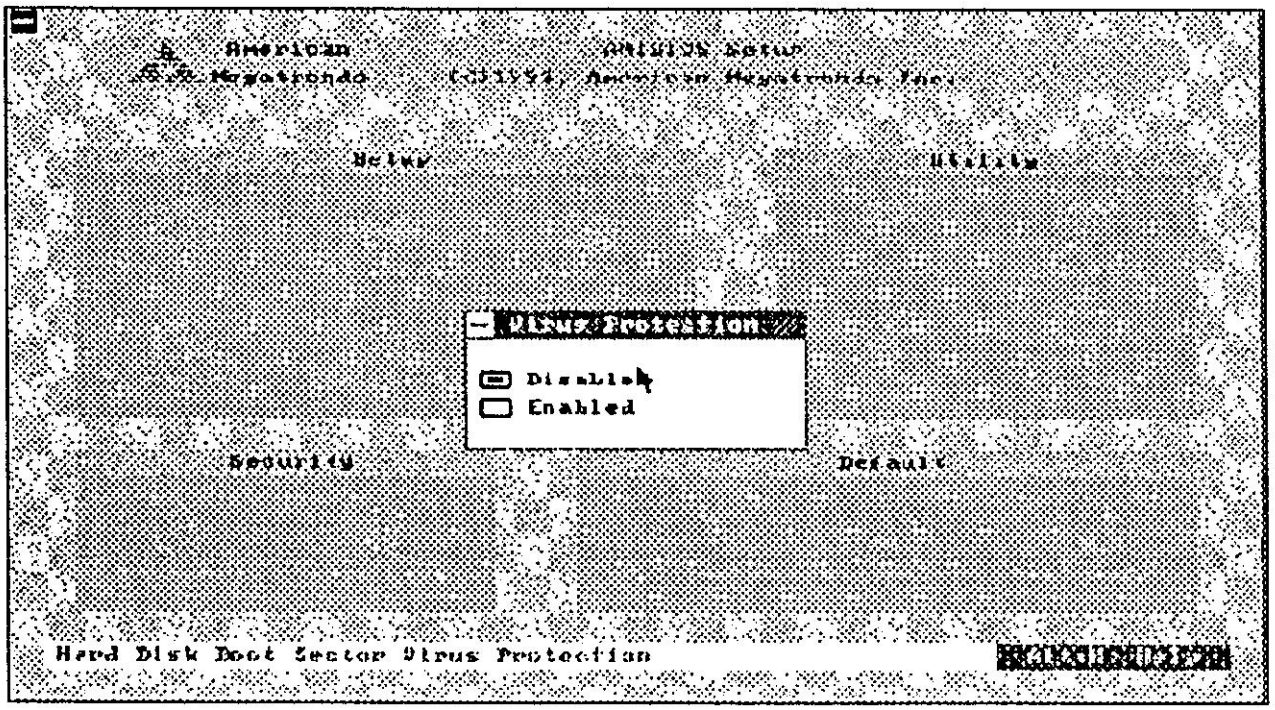
Figure 3-5 The screen of PASSWORD SETUP

If a new password is wanted, select the Password icon from the security section of the WinBIOS Setup main menu, enter the password and press <Enter>. The screen does not display the characters entered. After the current password is entered, enter the new password as prompted and press <Enter>.

If the password confirmation is incorrect, an error message will appear. If the new password is correctly entered, press <Esc> to return to the WinBIOS Setup main menu. The password is stored in CMOS RAM after WinBIOS Setup is completed. The next time the system boots, you are prompted for the password if the password function is present and is enabled.

3.8. Anti-Virus

When this icon was selected from the Security section of the WinBIOS Setup main menu, WinBIOS gives a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The following screen appears when the Anti-Virus icon was selected:



There are two settings "Enabled" and "Disabled". If enabled, the following message appears when a write is attempted to the boot sector. You may have to type N serveral times to prevent the boot sector write.

Boot Sector Write !!!
Possible VIRUS : Continue (Y/N)? _

The following is displayed after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT13 Hard Disk Drive Service :

Format !!!
Possible VIRUS : Continue (Y/N)? _

You should disable anti-virus protection when you try to format a hard disk drive.

If the anti-virus feature is enabled, a virus warning message will be displayed when you attempt to format the hard disk drive.

If you type "Y" in continue, formatting proceeds as normal.

If you do not want to continue formatting, you may have to press N several times (depending on how many retries are performed by the upper-level software). DOS, for example, does at least five retries before the format utility is actually aborted.

3.9. Default settings

The icons in this section allow you to select a group of settings for all WinBIOS Setup options. Not only can you use these icons to quickly set system configuration parameters, you can choose a group of settings that have a higher probability of working when the system is having configuration-related problem.

Original

Choose the Original icon to return to the system configuration values present in WinBIOS Setup session.

Optimal

You can load the optimal default settings for the WinBIOS Setup options by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

Fail-Safe

You can load the Fail-Safe WinBIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the WinBIOS Setup main menu.

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system behaves erratically.